DERWENT-ACC-NO: 1991-213016
DERWENT-WEEK: 199129

TITLE: Decorative board for flooring and walls - with transparent synthetic resin coating compsn. contg. far IR-emitting particles

PATENT-ASSIGNEE: NODA KK[NODAN]

PRIORITY-DATA: 1989JP-0245014 (September 22, 1989)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 03136807 A	June 11, 1991	N/A	000	N/A

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
JP03136807A	N/A	1989JP-0245014	September 22, 1989

INT-CL_(IPC): B27M003/00; E04F013/18

ABSTRACTED-PUB-NO: JP03136807A
BASIC-ABSTRACT: A decorative board is coated with a transparent synthetic resin paint compsn. contg. far IR-emitting particles having a far IR emissivity of at least 0.3.

The decorative board is, e.g., plywood, fibre board, particle board, Ca silicate board, plaster board, pulp/cement board, etc. and is coated with decorative paper, polyvinyl chloride film, etc. The particles are, e.g., TiO2, SiO2, carbon, Al2O3, etc. and have a Mohs hardness of at least 7 and a particle size of 40-300 microns and are used in amt. 5-40 PHR. The resin is, e.g., urethane resin, aminoalkyd resin or polyester resin.

USE/ADVANTAGE - The board maintains the soles of feet in a hygienic condition. The coating compsn. has an improved abrasion resistance and prevents the proliferation of microbes under humid conditions.

In an example, plywood flooring coated with a coloured layer and printed with a wood grain pattern was coated with a clear aminoalkyd resin contg. 35% solids and 8 pts. wt. ZrO2 having a size 40-100 microns and far IR emissivity of 0.32 using a flow coater to a thickness of 130 g/m2. and dried at 48 deg.C. for 10 min..

CHOSEN-DRAWING: Dwg.0/0

TITLE-TERMS:
DECORATE BOARD FLOOR WALL TRANSPARENT SYNTHETIC RESIN COATING COMPOSITION CONTAIN INFRARED EMIT PARTICLE

DERWENT-CLASS: A32 A93 L02 P63 Q45

CPI-CODES: A08-M09C; A11-B05; A12-A04A; A12-R03; A12-R07; L02-D04D; L02-D11;

UNLINKED-DERWENT-REGISTRY-NUMBERS: 1521U; 1521U ; 1544U ; 1544U ; 1669U ; 1669U ; 1694U ; 1694U ; 1966U ; 1966U

POLYMER-MULTIPUNCH-CODES-AND-KEY-SERIALS:
Key Serials: 0205 0209 0069 0072 0075 0231 0759 2319 2386 2423 3318 2513 2595

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⑲日本国特許庁(JP)　⑪特許出願公開

⑫公開特許公報(A)　平3−136807

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B 27 M 3/00	M	6702−2B	
E 04 F 13/18	C	7023−2E	

審査請求　未請求　請求項の数 2　(全3頁)

⑤4発明の名称　化粧板

⑳特　願　平1−245014
㉒出　願　平1(1989)9月22日

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明　細　書

1．発明の名称

化粧板

2．特許請求の範囲

① 化粧基材の表面に、

遠赤外線放射率が0.3以上の遠赤外線放射材料粒子が混入された透明合成樹脂塗料を塗布し、透明合成樹脂塗膜層を形成して成る、ことを特徴とする化粧板。

② 遠赤外線放射率が0.3以上の遠赤外線放射材料粒子が、モース硬度7以上、粒径40〜300μである請求項(1)記載の化粧板。

3．発明の詳細な説明

〔産業上の利用分野〕

本発明は、床材，壁材、などに用いる化粧板に関する。

〔従来技術及びその問題点〕

従来、化粧板表面に、透明合成樹脂塗料の上塗りを施し、仕上げた化粧板においては、

該化粧板を床材等、人体と直接接触する部材へ用いた場合、該表面は肌ざわりが冷たく、床面より直かにその冷たさを足裏に伝え、体に寒さを感じさせると同時に、それに伴ない足の疲労感、倦怠感を生起し、女性や高齢者の間において問題化しており、該床面上での長時間に亘る直立作業をつらいものとしていた。

また、該化粧板を床材以外に、内壁装材、天井材等に用いた場合は、それを浴室、洗面所など温度の高い所、結露の発生しやすい室内、或は梅雨の季節などには、該化粧板表面には、カビが発生し、衛生上，甚だ問題となつていた。

〔問題点を解決するための手段とその作用〕

本発明は上記従来の化粧板の問題点を解決するため、

化粧基板の表面に、遠赤外線放射率で、0.3以上の遠赤外線放射材料粒子を混入した透明合成樹脂塗料を塗布し透明合成樹脂塗膜層と形成したものである。

本発明化粧板はこのように構成することにより、次のような機能を有するものである。すなわち、

たとえば本発明化粧板を床材に用いた場合、人間の足裏より放たれる波長の遠赤外線は化粧板表面の遠赤外線放射率0.3以上の遠赤外線放射材料粒子によつて吸収される。このように遠赤外線放射材料粒子は遠赤外線を吸収した結果遠赤外線を放射し始める。

なぜならば、遠赤外線放射率0.3以上の遠赤外線放射材料粒子が吸収した人体から発する波長の遠赤外線は、同時に放射し易い波長帯の遠赤外線であるからである。

この結果足裏は、遠赤外線放射材料粒子から放射する遠赤外線によつて暑くもなく、冷たくもない、それでいて、足冷えを感じさせない程度の刺激を受けることができる。

〔構成の説明〕

以下、本発明化粧板の構成について説明する。

まづ、

化粧基材（1）の表面に、遠赤外線放射率が0.3以上の無機質粒子（2）を混入された透明合成樹脂塗料を塗装装置を用いて塗布する。

次に乾燥装置を用い該塗料の乾燥を行ない、透明合成樹脂塗膜層を形成する。

化粧基材（1）とは、合板、繊維板、パーテイクルボード、硅酸カルシウム板、石膏ボード、パルプセメント板等の有機室板、無機質板、有機無機混合板を任意基板として用い、その表面に突板、化粧紙、塩ビシート等のシート状物を貼着したものである。

あるいは、任意下地処理も施した后、木目模様、抽象柄模様等を直かに印刷形成したものなどが用いられる。

遠赤外線放射率が0.3以上の遠赤外線放射材料粒子（2）とは遠赤外線を自然放出するチタニア、シリカ、カーボン、アルミナ、グラフアジルコン、コージエライト等の遠赤外線放射材料を粒状にしたものである。

遠赤外線放射材料粒子（2）の遠赤外線放射率を0.3以下とすると、常温における遠赤外線放射エネルギー量が低く後述する本願発明の効果を得ることができない。

また好ましくは、遠赤外線放射材料粒子（2）はモース硬度7以上、粒径40～300μのものを用いる。

モース硬度7以下であると遠赤外線放射材料粒子（2）を自体が軟かく、化粧板表面の耐摩耗性を合わせもたせることができない。

更に粒径300μより大きいと、化粧板表面を粗面状となし意匠性を低下する。

40μより小さいと細かすぎ耐摩耗性が期待できない。

透明合成樹脂塗料とは、ウレタン樹脂、アミノアルキツド樹脂、ポリエステル樹脂等の塗料が用いられる。

透明合成樹脂塗料は必要に応じて任意カラー着色を施しても良い。

遠赤外線放射材料粒子（2）は該塗料の樹脂固形分に対し5～40重量部程度が好ましい。

5重量部以下であると、遠赤外線放射材料粒子の塗布面への塗布分散密度が低くなるため、遠赤外線放射が行なわれる密度が低くなり、人体へ放射される遠赤外線の放射量が低くなる。

また、遠赤外線の効果とは別に、耐摩耗性の効果を現象させることにもなる。

40重量部以上であると、遠赤外線放射材料粒子の塗布面への塗布分散密度は高くなるため、遠赤外線放射が行われる密度は高くなり、人体へ放射される遠赤外線の放射量も高くなるが、塗料に対する量が多くなりすぎ、塗膜の性状の劣化を招き、同時に表面を艶消し状とし表面光沢の低下を起こし、表面意匠性を低下させてしまう。

遠赤外線放射材料粒子（2）の混入された透明合成樹脂塗料は塗布後、乾燥し透明合成樹脂塗膜層（3）が形成され、化粧板は完成される。

〔実施例〕

常法により目止め処理、下地着色塗装、木目模様印刷を順次行つた合板に、粒径40～100μの範囲にあり、かつ遠赤外線放射率0.32のジルコン、8重量部を固型分35%の透明アミノアルキツド塗料100重量部に混合して得た透明合成樹脂塗料をフローコーターを用いて130g/m²

塗布し、塗布後、乾燥装置によつて、４８℃、１０分、乾燥させ、遠赤外線を放射する化粧板を得た。

〔発明の効果〕

a．本発明の化粧板を床材とした場合、人間の足裏より放射される遠赤外線は化粧板表面の遠赤外線放射率0.3以上の遠赤外線放射材料粒子によつて吸収される。

この結果遠赤外線放射材料粒子は吸収した遠赤外線の熱に反応して自ら遠赤外線を放射し始める。この場合、放射材料粒子の遠赤外線放射率を0.3以上のものを用いているので、人間の足裏から放射する遠赤外線の波長のものでも、放射材料粒子は反応し、遠赤外線の放射を始め、人間の足裏から遠赤外線の放射が継続する限り、その放射を継続する。

これによつて、足裏は遠赤外線によつて暑くもなく、冷たくもなく、それでいて足冷えを感じさせない程度に足の体温を保つことが出来、夏場，冬場を問わず、直立作業に際し足冷えからくる足の疲労感、倦怠感、だるさを生起させることなく、長時間に亘る直立作業もしやすくなる。

b．透明合成樹脂塗料に混入された遠赤外線放射材料は、減摩剤の機能を持ち、化粧板表面の耐摩耗性を向上させる効果を持つ。

c．本発明化粧板を床暖房の表面材に使用すれば、熱効果を高めることができ、光熱費の節減につながる。

d．本発明化粧板を内装壁面、天井面に用いた場合も該化粧板表面から遠赤外線が放射されているため化粧板表面の細菌の発生を防ぎ、カビの発生と防止し、衛生面での問題点が改善された。

4．図面の簡単な説明

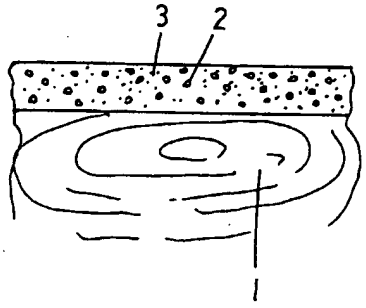
図面は本発明化粧板の断面図である。

1：基材

2：遠赤外線放射材料粒子

3：透明合成樹脂塗料

代　理　人　弁理士　羽　生　栄　吉



PTO: 2002-1306

Japanese Published Unexamined (Kokai) Patent Application No. H3-136807, published June 11, 1991; Application No. H1-245014, filed September 22, 1989; Int. Cl.[5]: B27M 3/00 E04F 13/18; Inventor: Eiko Sudo; Assignee: Noda Corporation; Japanese Title: Keshouban (Decorative Laminated Board)

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1. Title of Invention

Decorative Laminated Board

2. Claim(s)

1. A decorative laminated board, characterized in that a transparent synthetic resin paint with a far infrared radiation material particles at a 0.3 or higher far infrared radiation ratio mixed are applied so as to form a transparent synthetic resin coating film layer.

2. A decorative laminated board, as disclosed in Claim 1, characterized in that the far infrared radiation material particles at the 0.3 or higher far infrared radiation ratio has the following properties: a 7 or higher Mohs' hardness; a 40 to 300 μ particle diameter.

3. Detailed Description of the Invention

[Field of Industrial Application]

This invention pertains to decorative laminated boards that are used for floor materials and wall materials.

[Prior Art and the Problems]

As for conventional decorative laminated boards that are finished by applying a

finishing coat of transparent synthetic resin paints onto the surfaces of the decorative laminated boards, when the decorative laminated boards are used for members that are directly brought into contact with human body, such as floor materials, the surfaces give a cold touch. Because the coldness is directly transmitted from the floor surfaces to the soles, the body feels cold. With the cold feeling, fatigue occurs to the feet. This is a problem among women and old people. They experience much difficulty during works on the floor surfaces for a long period of time by a standing position.

When the decorative laminated boards are used for interior wall materials and ceiling materials other than floor materials and when they are used in locations at a high temperature such as bathrooms and powder rooms, rooms wherein dew easily occurs or the rainy season, fungi generate onto the surfaces of the decorative laminated boards, which is a sanitation problem.

[Measures to Solve the Problems and the Function]

In order to solve the problems of prior art decorative laminated boards, the present invention is characterized in that a transparent synthetic resin paint with a far infrared radiation material particles at a 0.3 or higher far infrared radiation ratio mixed are applied so as to form a transparent synthetic resin coating film layer.

With this structure, the decorative laminated board of the present invention has a function below. For example, when the decorative laminated board is used for a floor material, a far infrared ray at a wave length that is radiated from the human sole is absorbed by far infrared radiation material particles at a 0.3 or higher far infrared radiation ratio. After the

far infrared radiation material particles have absorbed the far infrared ray, they begin to radiate the far infrared ray.

The reason for it is that the far infrared ray at the wave length generated from the human body, which is absorbed by the far infrared radiation material particles at a 0.3 or higher far infrared radiation ratio, lies on a wave length band that easily generates the far infrared ray.

As a result, the sole feels neither hot nor cold. A stimulation at a degree that does not give a chilly feeling can be even received.

[Description of the Structure]

The structure of the decorative laminated board of the present invention is described hereinbelow.

First, a transparent synthetic resin paint with inorganic particles 2 at a 3.0 or higher far infrared radiation ratio mixed is applied onto the surface of a decorative base material 1 using a painting device.

Second, the paint is dried using a dryer so as to form a transparent synthetic resin coating film layer.

As for decorative base material 1, the following types of plates are used: organic room plates; inorganic plates; organic-inorganic mixture plates. These plates include the following types of boards: plywoods; fiber boards; particle boards; calcium silicate boards; gypsum boards; pulp cement boards. Sheets are adhered onto the surfaces, such as veneer, decorative sheets and vinyl chloride sheets.

Or printed materials can be also used after an optional base treatment has been applied, wherein a grain pattern or an abstract pattern is directly printed.

Far infrared radiation material particles 2 at a 0.3 or higher far infrared radiation ratio are made of the following substance granulated: titania; silica; carbon; alumina; graphazircon; cordierite.

If the far infrared radiation ratio of far infrared radiation material particles 2 is predetermined at 0.3 or lower, the amount of the far infrared radiation energy at a normal temperature is low. As a result, the effect of the present invention is not achievable.

Far infrared radiation material particles 2 is preferably used at a 7 or higher Mohs' hardness at a 40 to 300 μ particle diameter.

If the Mohs' hardness is below 7, far infrared radiation material particles per se are soft. Due to the softness, abrasion resistance cannot be given to the surface of the decorative laminated board.

If the particle diameter exceeds 300 μ, the surface of the decorative laminated board increases its roughness. Due to the increased roughness, the designability deteriorates.

If the particle diameter is below 40 μ, the particles are excessively fine. Abrasion resistance cannot be obtained.

As for the transparent synthetic resin paint, the following types of paints are used: urethane resin; amino alkyd resin; polyester resin.

An optional coloring can be applied to the transparent synthetic resin paint as needed.

Far infrared radiation material particles 2 is preferably used at about 5 to 40 weight parts in relation to a resin solid portion of the paint.

If the particle amount is below 5 weight parts, the coat dispersion density of the far infrared radiation material particles to the coating surface lowers. Because of this, the far infrared radiation density lowers. Subsequently, the amount of the far infrared radiation radiated to human body decreases.

The effect of abrasion resistance is demonstrated other than that of the far infrared.

If the particle amount exceeds 40 weight parts, the coat dispersion density of the far infrared radiation material particles to the coating surface increases. Because of this, the far infrared radiation density increases. The amount of the far infrared radiation radiated to human body also increases. However, the particle amount in relation to the paint amount excessively increases. As a result, the condition of the coating film deteriorates. As the surface changes to a frosting condition, the glossiness of the surface is reduced. The designability of the surface consequently deteriorates.

After the transparent synthetic resin paint with far infrared radiation material particles 2 mixed has been applied, it is dried so as to form transparent synthetic resin coating film layer 3. The formation of the decorative laminated board is completed.

[Embodiment]

A transparent synthetic resin paint is applied to a plywood at 130 g/m^2 using a flow coater. The transparent synthetic resin paint has a 40 to 100 μ particle diameter and is obtained while zircon at a 0.32 far infrared radiation ratio at 8 weight parts is mixed into a transparent amino alkyd paint with a 35% solid portion at 100 weight parts. The plywood is formed by applying the following steps using a conventional method: a filling treatment; a base

coloring painting; a grain pattern printing. After the application of the resin paint has been completed, the plywood is dried at 48°C for 10 minutes. A decorative laminated board that radiates afar infrared ray is obtained.

[Advantageous Result of the Invention]

a. As the decorative laminated board of the present invention is used as a floor material, the far infrared ray radiated from the human sole is absorbed by the far infrared radiation material particles that have a 0.3 or higher far infrared radiation ratio on the surface of the decorative laminated board.

As a result, the far infrared radiation material particles per se begins to radiate a far infrared ray by reacting to the heat of the absorbed far infrared ray. In this case, because the far infrared radiation ratio of the radiation material particles is 0.3 or higher, the particles react even to the wave length of the far infrared ray radiated from the human sole. Due to the reaction, the particles begin to radiate a far infrared ray. As long as the radiation of the far infrared ray from the human sole continues, the radiation by the panicles continues.

Due to this effect, the sole neither feels hot nor cold because of the far infrared ray. The temperature of the sole can be maintained at a degree that does not feel chilly. Regardless of the season if it is winter or summer, fatigue of the sole due to cold feet during a work by a standing position will not occur. Thus, a work by the standing position for a long period of time becomes easier.

b. The far infrared radiation material mixed into the transparent synthetic resin paint has a function of an abrasion reducing agent and improves the abrasion resistance of the surface

of the decorative laminated board.

c. When the decorative laminated board of the present invention is used for a surface material of a floor heater, the heat effect can be improved. Thus, the cost-saving on utilities is achieved.

d. When the decorative laminated board of the present invention is used for a interior wall surface and a ceiling surface, because the far infrared ray is radiated from the board surface, a generation of bacteria and fungi on the board surface is also prevented. Thus, the sanitation improves.

4. Brief Description of the Invention

The drawing is a cross-sectional view illustrating a decorative laminated board of the present invention.

1...Base material

2...Far infrared radiation material particles

3...Transparent synthetic resin paint

Translations Branch
U.S. Patent and Trademark Office
1/17/02
Chisato Morohashi